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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/852,582	05/09/2001	Jithamithra Sarathy	312/12	5064

27538 7590 07/23/2002

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EXAMINER

NGUYEN, JOSEPH H

ART UNIT PAPER NUMBER

2815

DATE MAILED: 07/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/852,582

Applicant(s)

SARATHY ET AL.

Examiner

Joseph Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 May 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 18-29 is/are pending in the application.
- 4a) Of the above claim(s) 14, 15 and 20-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 16, 18, 19 and 29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 10 May 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsui (JP Patent 363111679A).

Regarding claim 1, Matsui discloses on figure 3 a semiconductor device comprising "a buried grating [14]; a waveguide core [13], an absorption section [16] and a tuning section [18]".

Regarding claim 2, Matsui discloses on figure 3 "the device is integrated in a single optical circuit on a common substrate [11]".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui in view of Aoki et al.

Regarding claims 3 and 4, Matsui discloses on figure 3 substantially all the structure set forth in the claimed invention except the device length equal or less than

500 um and the device width equal or less than 100 um. However, Aoki et al discloses on figure 1A a semiconductor device having the device length equal or less than 500 um and the width equal or less than 100 um. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Matsui by having the device length equal or less than 500 um and the device width equal or less than 100 um for the purpose of simplifying the manufacturing method of a photo detector device.

Claims 5-13 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chandrasekhar in view of Nitta et al.

Regarding claims 5-13 and 29, Chandrasekhar discloses on figure 2 substantially all the structure set forth in the claimed invention except "a grating positioned between the substrate and the undoped region". However, Nitta et al discloses on figure 4 a grating 201a positioned between the substrate 201 and the undoped region 202. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chandrasekhar by having a grating positioned between the substrate and the undoped region for the purpose of improving the light emission efficiency of a phtodetector.

Claims 16, 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui in view of Rushing.

Regarding claims 16, 18-19, Matsui discloses the photodetector as set forth in the claimed invention. It would have been obvious to one of ordinary skill in the art at the time the invention was made to integrate the photo detector as disclosed by Matsui into the data network disclosed by Rushing on figure 3 for the purpose of improving the photo detection efficiency in an electrical circuit.

Response to Arguments

Applicant's arguments filed 5/10/2002 have been fully considered but they are not persuasive.

With respect to claim 1, applicant argues that Matsui fails to disclose a tuning section. However, the element 18 in figure 3 of Matsui, even though a p electrode as disclosed in the Abstract, functions as a tuning section by leading electric current through and changing the output of the light in a photo-detector. Therefore, this element 18 is reasonably considered as a tuning section in a broad sense.

With respect to claims 3-4, applicant argues that there is no suggestion to combine Matsui and Aoki. However, the only difference between the claimed invention and Matsui is the dimension of the device as disclosed by Aoki. Therefore, there is obviously a motivation to modify Matsui and Aoki.

With respect to claims 5-13, applicant argues that there is no use for a grating integrated in the photodiode device shown in figure 2 of Chandrasekhar. However, this conclusion is speculative since there is no evidence to factually prove that the photodiode device shown in figure 2 does not need a grating. Chandrasekhar does not teach that this photodiode needs no grating. Further, it is well known in the art that a

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grating is used to direct or deflect a small amount of light to a desired region. Therefore, it is obviously a benefit to use a grating in the photodiode of Chandrasekhar.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

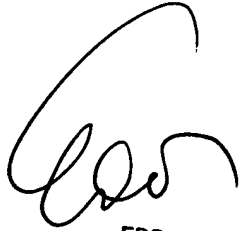
Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (703) 308-1269. The examiner can normally be reached on Monday-Friday, 7:30am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone number for the organization where this application or proceeding is assigned is (703)-308-7382 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956

JN
July 17, 2002



EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800